

**Climatological Data for December, 1910.  
DISTRICT No. 6, MISSOURI VALLEY.**

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**GENERAL SUMMARY.**

In the lower part of the drainage area, or below Omaha, the weather was dry and cold. In the remainder of the district it was generally warmer than in the average December, and the precipitation was irregularly distributed, but was not very much above or below the normal in any areas that were of any great extent. Upon the whole the conditions were quite favorable for outdoor work. Cattle were able to graze through most of the month, effecting a saving in forage and grain. On most of the government irrigation projects work progressed to a greater extent than is usual in December.

**TEMPERATURE.**

There was a marked absence of well-defined warm or cold periods. Each of the subdivisions of the drainage area had moderately high temperatures, but they occurred at times that differed widely, as the warm weather areas were quite limited in extent. The highest temperature was  $74^{\circ}$  at Farnsworth, Kans., on the 9th. The lowest temperatures at the various stations were not unusual. At some point in each of the States in the drainage area the temperature fell to zero or lower, but there were no especially low readings recorded. The lowest of record was  $32^{\circ}$  below zero at Marstonmoor, N. Dak., on the 6th. In the eastern portion of Nebraska and Kansas, in western Iowa, and in Missouri the average daily deficiency ranged from  $0.1^{\circ}$  to  $3.9^{\circ}$ . In the remainder of the district there was an excess that was most marked in the foothills of the Rocky Mountains, where, in several localities, it amounted to more than  $5^{\circ}$  per day.

**PRECIPITATION.**

The period of most general precipitation comprised the 3d, 4th, and 5th. In Colorado and western Nebraska the 10th, 11th, and 12th were rainy or snowy, but in the other portions of the district there was comparatively little precipitation between the 6th and the 19th. After the 19th the weather was rather unsettled and light rains or snows occurred frequently. There was a general deficiency in the Dakotas, eastern Nebraska, northern Kansas, and in those portions of Iowa and Missouri drained by the Missouri River, the deficiency being most marked in the two last-named districts. In the remainder of the drainage area the precipitation was unevenly distributed, and none of the subdrainage areas had either general excesses or deficiencies. The high mountain country, however, is an exception, as there the December snowfall, and there was very little rain, was deficient.

**MOUNTAIN SNOWFALL.**

*Montana.*—The autumn conditions were favorable for the natural storage of moisture. Over most of the mountain districts the precipitation was above the normal in September and October, and nearly all that occurred was absorbed by the soil, which was exceedingly dry on account of the long continued drought. During the latter part of November heavy snows fell in the mountains and by the close of the month from 2 to 5 feet had accumulated at high elevations. The temperatures were almost continuously below freezing during December, and the snow at the close of the month was quite solid and compact. The December snowfall was deficient in most sections, but as little of the earlier fall had melted the accumulated amount at the close of the year compared favorably with the average. However, the soil was unusually dry, notwithstanding the rains referred to above, and this

fact must be given due weight in estimating the water supply for the coming season.

*South Dakota.*—Considerably less than the usual amount of snow fell in the Black Hills during December; as very little of the November fall remained at the beginning of the month the year closed with less than the normal amount on the ground.

*Wyoming.*—Both in November and December there was less snow than normally falls during those months. However, the amount remaining on the ground at the end of December was quite compact.

*Colorado.*—The season's snowfall up to December 31 was much less than for the corresponding period last year and as a whole considerably less than the normal. In a few localities approximately the average amount occurred, but the areas so favored are too small to make up for the general and marked deficiency in the water stored for late irrigation. The snow is generally unpacked, and there has been little drifting.

**RIVERS.**

Low stages continued throughout the month. At Hermann, Mo., on the Missouri River, 103 miles from its mouth, the lowest was 1.7 feet; this stage prevailed from the 18th to the 23d, inclusive. On December 21 and 22, 1878, the river at Hermann fell to a reading of 0.0, the lowest of record. At St. Louis the Mississippi River fell to  $-1.4$  on the 17th, and established a new December record for low water; previously the low water record for the last month of the year was  $-1.3$ , in 1901. The Mississippi above the mouth of the Missouri was low also. At Hannibal, 113 miles above the confluence of the Mississippi and Missouri, the lowest stage since 1864 was  $-1.9$  on December 4, 1893; on December 14, 1910, a stage of  $-1.8$  was reached.

**ARE THE SPRINGS COLDER NOW?**

A paper on "Late spring frosts in relation to the fruit crop of Missouri."

(Read by GEORGE REEDER, Section Director, Weather Bureau, before the Fifty-third Annual Meeting of the Missouri State Horticultural Society, University of Missouri, Columbia, Mo., January 10-13, 1911.)

The frequent and heavy losses suffered by Missouri fruit growers from late spring frosts during the last 10 years have created some alarm among orchardists and have caused a few to question the policy of attempting the raising of fruit in this State on an extensive commercial scale. It is asserted by many that the climate of Missouri has changed; that our winters are milder and our springs are colder than formerly.

**OPINION WIDESPREAD.**

The assertion that our climate has changed, and for the worse, is not confined to Missouri alone by any means. Indeed, east of the Rocky Mountains the opinion that the climate is undergoing an appreciable change is general, especially among the agriculturists. The man who is the closest to nature always has been quick to note weather changes, and while many of his sayings and signs are not worthy perhaps to be handed down from father to son, still there are a few not to be altogether despised or thrown aside.

It is of course not an easy matter to compare the losses in fruit culture of 20 or 30 years ago with those occurring to the industry as carried on to-day. During the first decade of the 30 years ending with the spring of 1910, there were few, if any, so-called commercial orchards in Missouri. While every farmer possessed an orchard for home use, they were as a rule composed of many varieties of trees that blossomed at different times. It was no doubt a rare occurrence indeed,













TABLE 1.—*Climatological data for December, 1910. District No. 6—Continued.*

Stations.	Counties.	Elevation, feet.	Length of record, years.	Temperature, in degrees Fahrenheit.						Precipitation, in inches.						Sky.	Observers.			
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall, unadjusted.	Number of rainy days.	Number of clear days.	Number of partly cloudy days.	Number of all cloudy days.		
<i>Missouri—Continued.</i>																				
Hazelhurst.	Livingston.	17									0.97	- 0.61	0.50	0.7	4	15	5	11	sw.	W. H. Baker.
Hermann.	Gasconade.	482	36								0.67	- 1.24	0.54	T.	5	15	7	9	s.	C. T. Maushund.
Houston.	Texas.	1,280	18	32.2	- 3.9	60	17	8	21	37	2.10	- 0.02	0.76	7.0	6	15			E. Dempsey.	
Huntsville.	Randolph.	790	8															F. H. Hammett.		
Jefferson City §§.	Cole.	628	29	28.4	- 5.0	55	17	6	24	41	0.67	- 1.31	0.37	3.2	5	19	2	10	w.	Miss Emma Swift.
Kansas City.	Jackson.	963	21	32.0	+ 0.5	51	14†	12	24	25	1.25	- 0.11	1.12	1.3	4	11	13	7	nw.	U. S. Weather Bureau.
Kidder §§.	Caldwell.	1,017	20	29.3	+ 0.4	49	26	7	8†	31	0.90	- 0.59	0.75	4.0	2	15	9	7	nw.	J. F. Sharp.
Lamonte.	Pettis.	863	23	31.4		51	16†	7	8†	33	1.56	- 0.29	0.96	4.0	3	16	5	10	nw.	Dr. W. E. Walker.
Lebanon.	Laclede.	1,265	22	32.4	- 3.1	56	17	12	24	31	1.88	- 0.92	1.23	4.0	3	17	6	8	n.	M. W. Serl.
Lexington §§.	Lafayette.	813	28	31.4	+ 0.1	51	14	9	8†	31	1.24	- 0.61	1.04	2.0	3	21	0	10	s.	J. W. Kethley.
Liberty.	Clay.	864	22	31.2	- 0.4	51	16	8	24	32	1.40	- 0.02	1.10	3.0	2	5	16	10	nw.	W. C. Milmott.
Lockwood.	Dade.	1,088	16	35.0		55	17	13	2	33	1.23	- 0.68	0.57	2.0	4	18	2	11	nw.	C. S. Crow.
Marshall.	Saline.	779	20	29.6	- 1.4	48	16†	8	8†	31	1.97	- 0.19	1.17	6.0	3	19	3	8	nw.	Dr. W. H. Black.
Marshfield.	Webster.	1,492	2	35.0		58	29	11	30	36	1.31		1.00	5.0	4	12	9	10	se.	C. A. McCombs.
Maryville §§.	Nodaway.	1,180	20	27.3	+ 1.3	49	26	5	24	34	0.56	- 0.66	0.35	4.2	4	19	3	9	n.	J. R. Brink.
Mount Vernon.	Lawrence.	1,480	34	34.8	- 2.1	58	17	12	2	36	1.80	- 0.88	1.00	1.0	5	21	2	8	nw.	J. R. White & Son.
Nevada.	Vernon.	860	16								0.64	- 1.46	0.20	3.0	6	22	4	5	ne.	C. Jewel.
Oregon.	Holt.	1,113	55	26.6	- 2.0	49	26	2	8†	33	0.67	- 0.87	0.37	4.0	2	14	2	15	nw.	Tom Curry.
Osceola.	St. Clair.	738	11															W. E. Matthews.		
Pattensburg.	Davies.																	Do.	Lewis Spriggs.	
Rolla.	Phelps.	1,092	29	32.6		58	17	9	24	32	1.60	- 0.80	0.61	8.0	4	19	2	10	nw.	Wm. Burton.
St. Charles.	St. Charles.	614	32	32.3	- 2.6	57	23	9	13	37	1.08	- 1.00	1.03	T.	2	17	4	10	nw.	Prof. P. J. Wilkins.
St. Joseph.	Buchanan.	967	39	28.9		50	16	8	28	1.12	+ 0.09	0.78	4.5	4	9	11	11	nw.	L. C. Saeger.	
St. Louis.	St. Louis.	567	39	32.2	- 3.3	54	17	11	24	27	1.18	- 1.05	0.60	2.2	6	14	3	14	nw.	U. S. Weather Bureau.
Sublett.	Adair.	1,000	30	29.3	+ 0.6	51	15	0	12	36	0.50	- 1.20	0.60	T.	1	15	8	8	sw.	Do.
Trenton.	Grundy.	812	15	28.8	- 0.5	47	14	5	24	26	1.03	- 0.47	0.71	0.8	5	15	6	10	nw.	Lewis Spriggs.
Unionville.	Putnam.	1,072	17	25.4	- 2.0	47	26	0	24	42	0.70	- 1.05	0.60	6.0	2	20	4	7	nw.	W. H. Estes.
Warrensburg.	Johnson.	883	32	32.1	- 1.6	51	3	10	24	27	0.96	- 0.90	0.43	5.0	3	17	5	9	nw.	Geo. W. Davis.
Warrenton.	Warren.	865	20	28.9	- 3.4	56	17	6	24	38	0.73	- 1.61	0.57	0.5	5	15	3	13	nw.	A. F. Smithson.
Warsaw.	Benton.	700	6	33.0		56	16	5	8	43	1.38		0.63	6.0	4	20	3	8	nw.	Dr. John H. Frick.
Wheatland.	Hickory.	920	18																Mrs. S. A. Jackson.	

a, b, c, etc., indicate, respectively, 1, 2, 3, etc., days missing from the record.

\* Precipitation included in that of the next measurement.

\*\* Temperature extremes are from observed readings of the dry bulb; means are computed from observed readings.

† Also on other dates.

‡ Separate dates of falls not recorded.

§ Data are from standard instruments not supplied by the U. S. Weather Bureau.

§§ Instruments are read in the morning; the maximum temperature then read is charged to the preceding day, on which it almost always occurs.

¶ Estimated by observer.

¶ Precipitation for the 24 hours ending on the morning when it is measured.

|| Precipitation is less than 0.01 inch rain or melted snow.















